96-1-14/31

Increasing the Economic Effect of Thermal De-aeration of Feedwater for Steam Boilers.

carrying out lime and magnesia de-silication of water at temperatures of 20 - 25 °C should be investigated. If the conditions are favourable, delivery of water from the lime-cationite installations to the turbine condensers should be tried. There are 1 figure and 3 tables.

ASSOCIATION: TEP - VTI

AVAILABIE: Library of Congress.

Card 3/3

GUREVICH, L.S., montazhnik; ZIMENKO, N.A., montazhnik.

Light-duty screw jack with a capacity of 10 tons. Suggested by L.S. Gurevich, N.A.Zimenko. Rats. i izobr. predl. v stroi. no.15:50 '60. (MIRA 13:9)

1. Po materialam Zaporozhskogo stroitel'no-montazhnogo upravleniya No.203 tresta Metallurgmontazh Ministerstva stroitel'stva USSR.
(Lifting jacks)

PROKHOROV, F.G., kand.tekhn.nauk; GUREVICH, L.S., inzh.

Features of the water treating systems of electric power plants being constructed in the present seven-year plan.
Teploenergetika 8 no.4:3-6 Ap '61. (MIRA 14:8)

1. Ministerstvo stroitel'stva elektrostantsiy, Vsesoyuznyy gosudarstvennyy proyektnyy institut Teploelektroproyekt.
(Electric power plants)
(Feed-water purification)

GUREVICH, Leonid Samoylovich, zhurnalist(Riga); NOSOV, Sergey Petrovich, nauchnyy sotr.; GUDKOVA, N., red.; SEMENOVA, O., tekhn. red.

[Army Commander Aleksandr Stepin']Komandarm Aleksandr Stepin'. Moskva, Gospolitizdat, 1962. 52 p. (MIRA 15:12)

1. Gosudarstvennyy arkhiv Sovetskoy Armii (for Nosov).
(Stepin', Aleksandr Karlovich, d.1920)

SHEYBER, B.P., kand. tekhn. nauk; GUREVICH, L.S., inzh.

Set of the BO-1 equipment for preliminary and subsequent bituminization. Transp. stroi. 15 no.2:52-53 F '65. (MIRA 18:3)

PROKHOROV, F.G., kand.tekhn.nauk; GUREVICH, L.S., inzh.

Comparison of water conditions and means for water treatment in block-type state regional electric power plants with different boiler systems. Teploenergetika 12 no.10:2-8 O '65.
(MIRA 18:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy teplotekhnicheskiy institut i Vsesoyuznyy gosudarstvennyy proyektnyy institut "Teploelektroproyekt".

GUREVICH, L. SH.

USSR/Chemistry - Synthesis

Card 1/1 Pub. 151 - 34/38

Authors : Khaletskiy, A. M., and Gurevich, L. Sh.

Title : Synthesis of ethyl ether and amide of alpha1-amino nicotinic acid.

Periodical : Zhur. ob. khim. 24/2, 369-372, Feb 1954

Abstract : The synthesis of ethyl ether and amide of alpha1-amino nicotinic acid from technical anabasine-sulfate was investigated. The ether was obtained through oxidation of alpha1-chloroanabasine followed by amination and etherification of the formed alpha1-amino nicotinic acid. Treatment of the ether with ammonia under pressure leads to the formation of amide of alpha1-amino nicotinic acid. The anesthetic effect of the ether was established through pharmacological research. Three USSR references (1931-1941).

Institution: The Chemical-Pharmaceutical Institute, Leningrad

Submitted : September 26, 1953

GUREVICH, L. Sh.

USSR.

Synthesis of the ethyl ester and amide of α-aminoiliolinic acid. A. M. Khaletskii and L. Sh. Gurevich. *J. Gen. Chem. U.S.S.R.* 24, 377-9(1954)(Engl. translation).—See *C.A.* 49, 4643h. H. L. H.

GUREVICH, L., kand. tekhn. nauk; TURCHIKHIN, E., kand. tekhn. nauk

Using colored materials in constructing pavements. Zhil.-kom. khoz. 9 no.9:16-17 '59. (MIRA 13:2)
(Pavements)

[redacted], V.P., assistent; GUREVICH, L.V., inzh.

Balancing of engines in assembly at the Automobile Repair Plant No.4. Izv. vys. ucheb. zav.; mashinostr. no.3:100-102 '64. (MIRA 17:7)

1. Moskovskoye vysshoye tekhnicheskoye uchilishche imeni Baumana.

L 39673-65
ACCESSION NR: AP5010475 UR/0294/65/003/002/0318/0321

AUTHOR: Ryabova, V. G.; Gurvich, L. V.

TITLE: Study of metal-hydroxyl bond energies in CaOH, SrOH, and BaOH molecules

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 2, 1965, 318-321

TOPIC TAGS: combustion, hydrogen oxygen, metallized fuel, metal combustion, flame spectroscopy

ABSTRACT: The energies of the hydroxyl-metal bonds in CaOH, SrOH, and BaOH, which may be present together with the oxides in hydrogen-air flames, were determined spectroscopically by studying the reaction of Ca, Sr, and Ba with combustion products of hydrogen-air flames having different compositions. The metals were introduced as $SrCl_2$, $BaCl_2$ and $Ca(COO)_2$ solutions into the flame of a Meker burner. The partial pressures of the metals were determined from the spectral line intensities measured at flame temperatures of 1760—2160K. The experiments yielded bond energies of about 101, 97, and 112 kcal/mol for Ca, Sr, and Ba, respectively. These values indicate, as was shown by thermodynamic calculations, that a considerable amount of the metals must be present in rich hydrogen-air flames as Me-OH, formed by the reaction $Me + H_2O = MeOH + H$. The bond energies of MeO were

Card 1/2

L 39673-65
ACCESSION NR: AP5010475

recalculated from previous experimental data obtained with acetylene-air, acetylene-oxygen, hydrogen-oxygen, and monoxide-oxygen flames. Orig. art. has: 2 tables.

[FV]

ASSOCIATION: Nauchno-issledovatelskiy institut vysokykh temperatur (Scientific Research Institute of High Temperatures)

SUBMITTED: 30Oct64 ENCL: 00 SUB CODE: FP

NO REF SOV: 012 OTHER: 004 ATD PRESS: 3229

Card 2/2

GUREVICH, L. V. Cand. Tech. Sci.

Dissertation: "Premises For Solution of the Problem of Designing Paired Highways and Railroads." Moscow Inst of Engineers of Municipal Building, 11 Feb 47.

SO: Vechernyaya Moskva, Feb, 1947 (Project #17836)

GUREVICH,L.V.; YAMPOL'SKAYA,T.G.; MURZAYEVA,L.B.; KHRUNOV,N.P., redaktor; OTOCHEVA,M.A., redaktor; PETROVSKAYA,Ye., tekhnicheskiy redaktor

[Road traffic signs] Dorozhnye signal'nye znaki. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1955. 46 p. (Traffic regulations)
(MLRA 9:2)

Gurevich, L.V.

USSR/Optics - Physiotogical Optics K-9

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 13180

Author : Gurtovoy, G.K., Gurevich, L.V., Murzayeva, L.B., Seletskaya, L.I., Yampol'skaya, T.G.

Inst : -

Title : Investigation of the Laws of Color and Three Dimensional Visions and Their Use for Increasing the Effectiveness of Road Signals.

Orig Pub : Tr. In-ta biol. fiz. AN SSSR, 1955, 1, 136-157

Abstract : Starting with the premise that the problems of visibility of road signals are insufficiently well developed, the authors have undertaken an extensive investigation of the influence of such factors, as the shape of the signs, the combination of colors of the image on the sign and of the background, the dimension of the sign, and its illumination. As a total the following recommendations were made: (1) With respect to the shape -- rectangle (1:4 to 1:10),

Card 1/2

SOSYANTS, V.G.; OVECHNIKOV, Ye.V.; GUREVICH, L.V.; LESEVITSKIY, N.N.; BASHKIROV, L.G., redaktor; KONYASHINA, A., tekhnicheskiy redaktor

[Construction of trolley tracks with concrete foundations] Konstruktsii tramvainykh putei s betonnymi osnovaniiami. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1956. 52 p. (Street railways)
(MLRA 9:11)

GURVICH, I. A., [illegible], I.E., SMIRNSKIY, I.I., [illegible], T.Ya., [illegible], O.F.

Investigation of the Interrelationships Underlying Color and Space Vision and Application of Results Obtained in Increasing the Effectiveness of Road Signs

Trudy Instituta Biologicheskoy Fiziki, No 1, 1956
S916, 5 Mar 1956, p 49

GUREVICH, L.V.

Multiple-seated slabs in road construction. Gor. khoz. Mosk. 30 no.9:39 S '56. (MLRA 9:12)

1. Starshiy nauchnyy sotrudnik Akademii kommunal'nogo khozyaystva.
(Concrete slabs) (Road construction)

GUREVICH, L.V.; DITERIKHS, N.D.; LUCHAY, G.A.; NIKOL'SKAYA, N.Ye.

Using plastics in the rolling stock and in the electric power supply of public transportation. Sbor.nauch.rab.AKKH no.13:192-202 '62. (MIRA 16:4)

(Plastics)
(Local transit--Equipment and supplies)

SOSYANTS, V.G., inzh.; YUDIN, V.A., kand. tekhn.nauk; KNORRE, V.E., inzh.; LANTSBERG, Yu.S., inzh.; DAVIDYANTS, N.M., inzh.; GEZENTSVEY, L.B., kand. tekhn. nauk; YEGOROV, P.A., inzh.; FAYNBERG, E.S., inzh.; BAGDASAROV, S.M., inzh.; GUREVICH, L.V., kand. tekhn. nauk; CHERNYSHOV, B.G., inzh.; GADZHINSKIY, T.G., inzh.; ZASOV, I.A., kand. tekhn.nauk; BALOVNEV, V.I., kand. tekhn.nauk; GIBSHMAN, Ye.Ye., prof., red.; DZHUNKOVSKIY, N.N., prof., red.; BOLOTINA, A.V., red. izd-va; LELYUKHIN, A.A., tekhn. red.

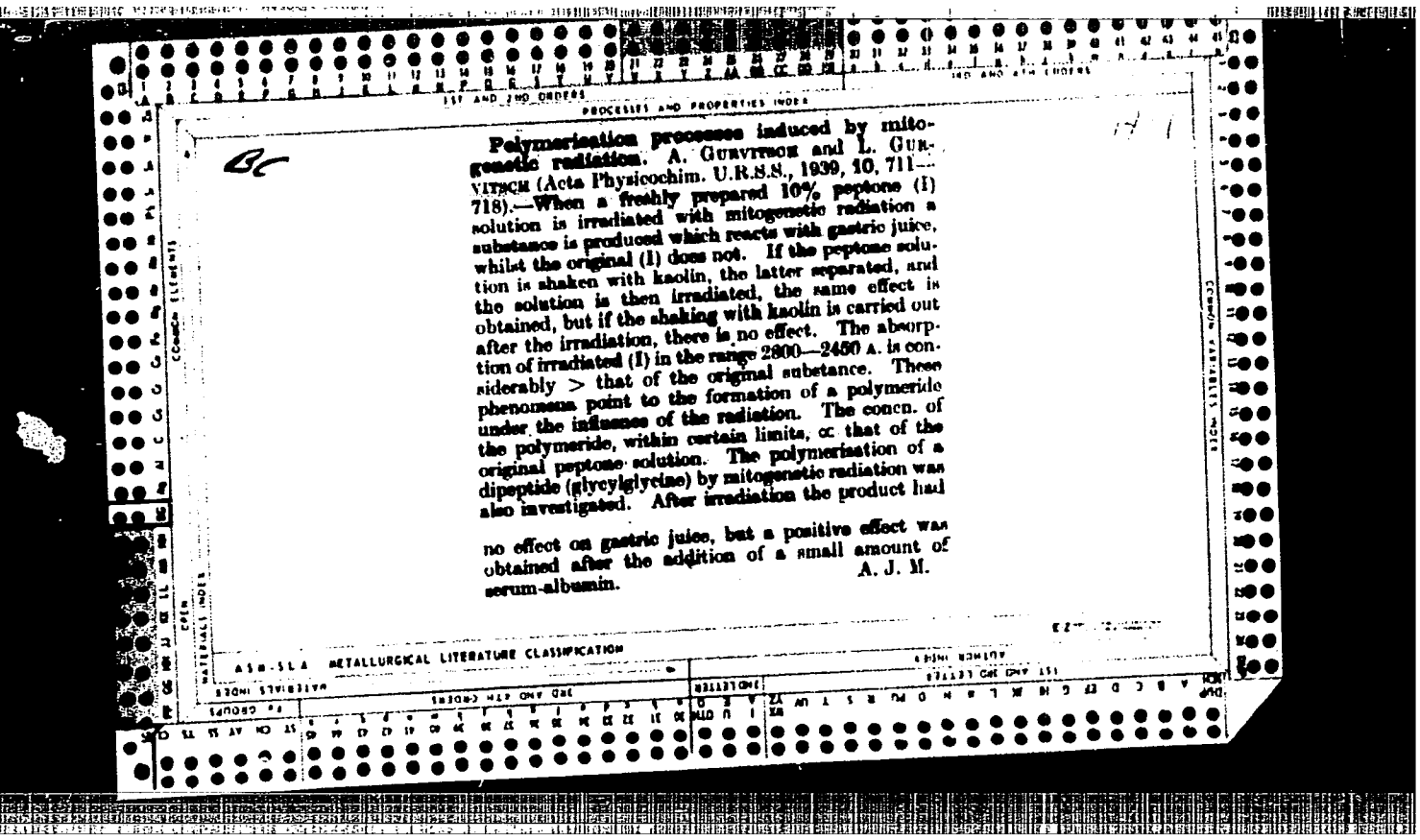
[Manual for the design, construction, and maintenance of urban roads, bridges, and hydrotechnical structures] Spravochnik po proektirovaniiu, stroitel'stvu i ekspluatatsii gorodskikh dorog, mostov i gidrotekhnicheskikh sooruzhenii. Red. kol.E.E.Gibshman,N.N.Dzhunkovskii, P.A. Egorov. Moskva, Izd-vo M-va kommun.khoz.RSFSR. Vol.3. [Roads] Dorogi. 1963. 814 p. (MIRA 16:7)
(Roads)

GUREVICH, L. V., kand.tekhn.nauk; SOSKIN, G. M., kand.tekhn.nauk

Precast street and sidewalk pavement. Nov.tekh.zhil.-kom.khoz.: Gor.dor.-most.khoz. i transp. no. 2:5-9 '63. (MIRA 17:5)

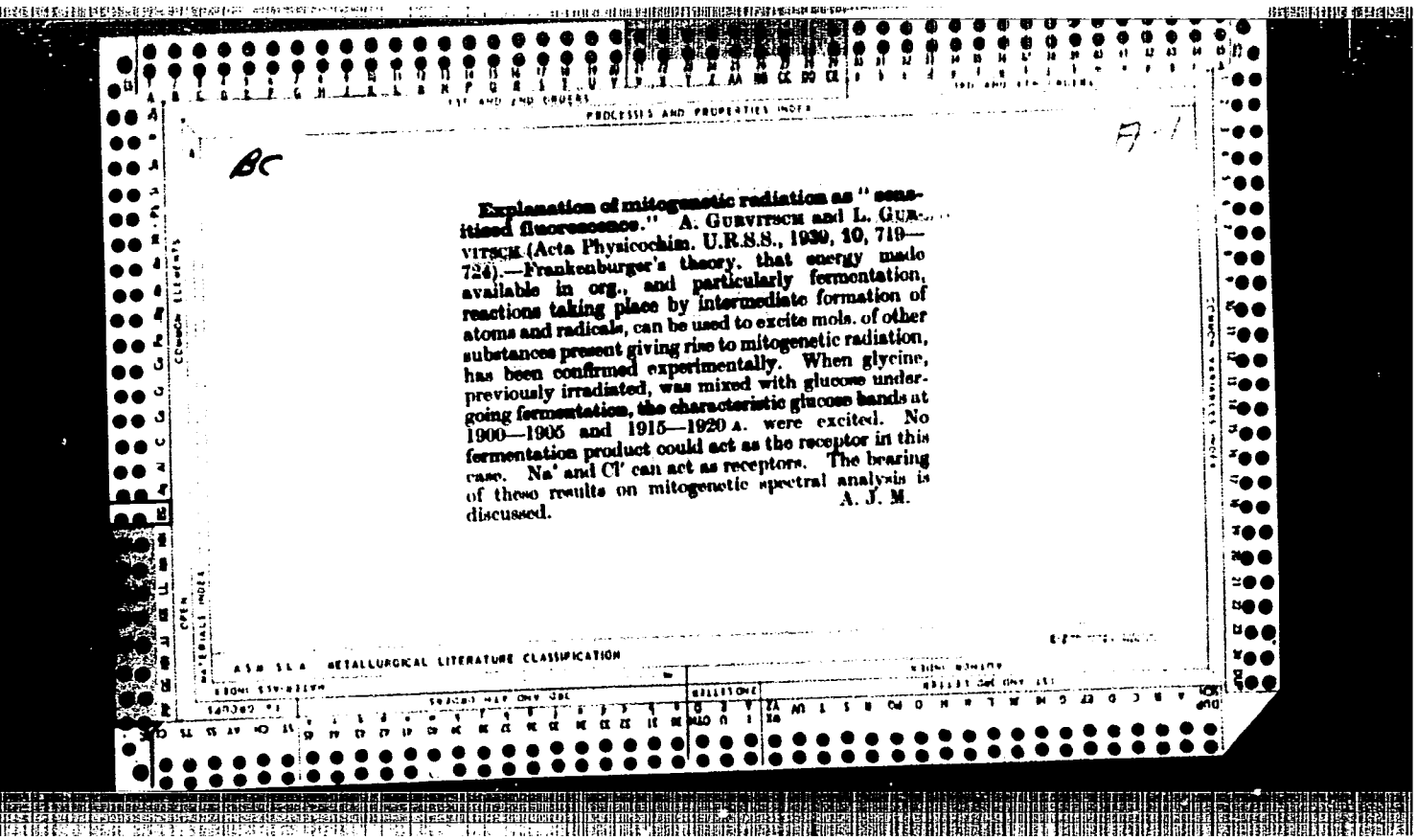
GUREVICH, L. V., kand.tekhn.nauk; GURFINK, T. Sh., inzh.; SOSKIN, G. M., kand. tekhn. nauk

Landscaping and problems in designing city streets. Nov.tekh. zhil.-kom.khoz.:Gor.dor.-most.khoz. i transp. no. 2:9-12 '63. (MIRA 17:5)



Polymerisation processes induced by mitogenetic radiation. A. GURVITSCH and L. GURVITSCH (Acta Physicochim. U.R.S.S., 1939, 10, 711—718).—When a freshly prepared 10% peptone (I) solution is irradiated with mitogenetic radiation a substance is produced which reacts with gastric juice, whilst the original (I) does not. If the peptone solution is shaken with kaolin, the latter separated, and the solution is then irradiated, the same effect is obtained, but if the shaking with kaolin is carried out after the irradiation, there is no effect. The absorption of irradiated (I) in the range 2800—2450 A. is considerably > that of the original substance. These phenomena point to the formation of a polymeride under the influence of the radiation. The concn. of the polymeride, within certain limits, cc that of the original peptone solution. The polymerisation of a dipeptide (glycylglycine) by mitogenetic radiation was also investigated. After irradiation the product had no effect on gastric juice, but a positive effect was obtained after the addition of a small amount of serum-albumin.

A. J. M.



BC

A-1

Explanation of mitogenetic radiation as "sensitised fluorescence." A. GURVITSCH and L. GURVITSCH (Acta Physicochim. U.R.S.S., 1939, 10, 719—724).—Frankenburger's theory, that energy made available in org., and particularly fermentation, reactions taking place by intermediate formation of atoms and radicals, can be used to excite mols. of other substances present giving rise to mitogenetic radiation, has been confirmed experimentally. When glycine, previously irradiated, was mixed with glucose undergoing fermentation, the characteristic glucose bands at 1900—1905 and 1915—1920 A. were excited. No fermentation product could act as the receptor in this case. Na^+ and Cl^- can act as receptors. The bearing of these results on mitogenetic spectral analysis is discussed. A. J. M.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

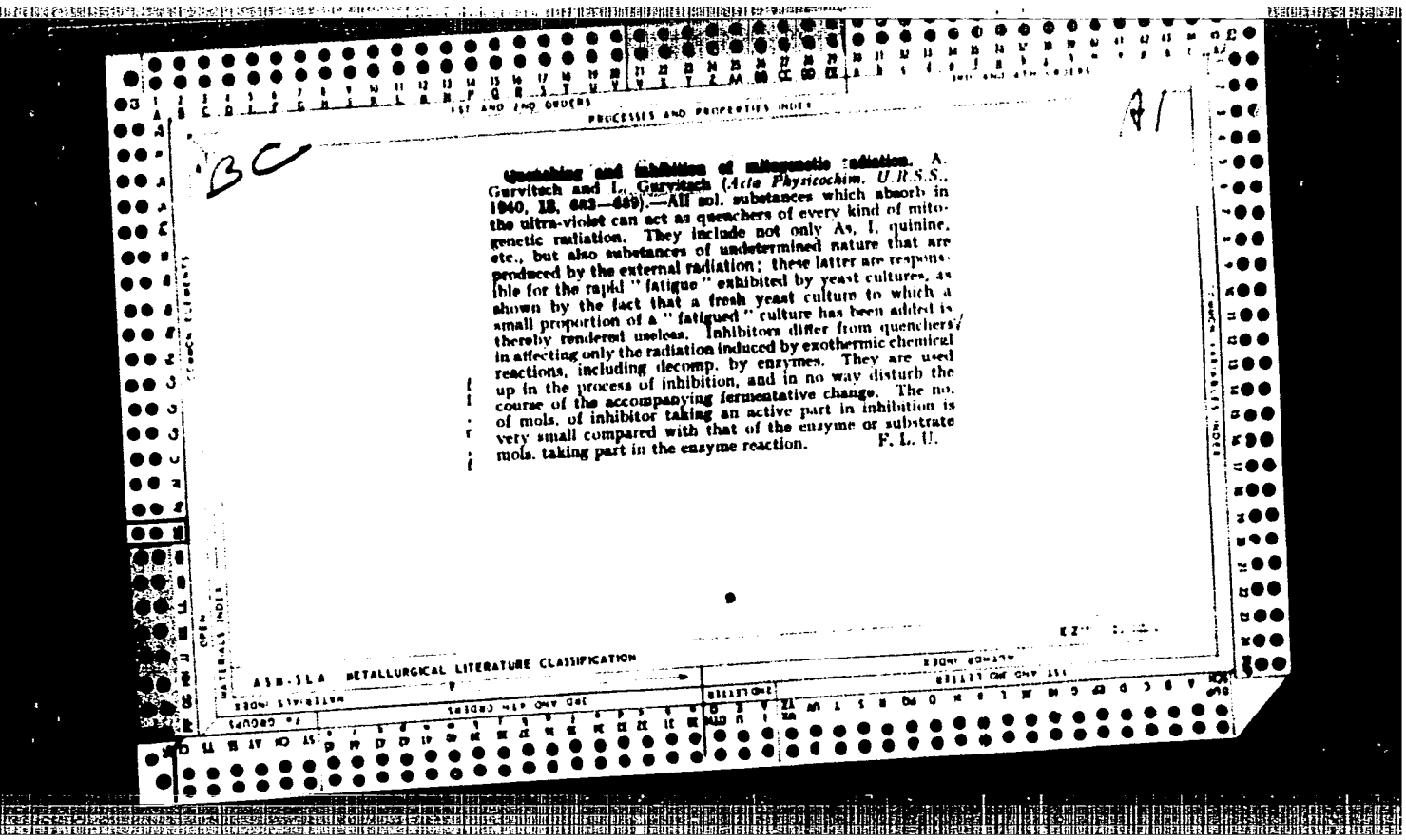
3RD AND 4TH ORDERS

3C

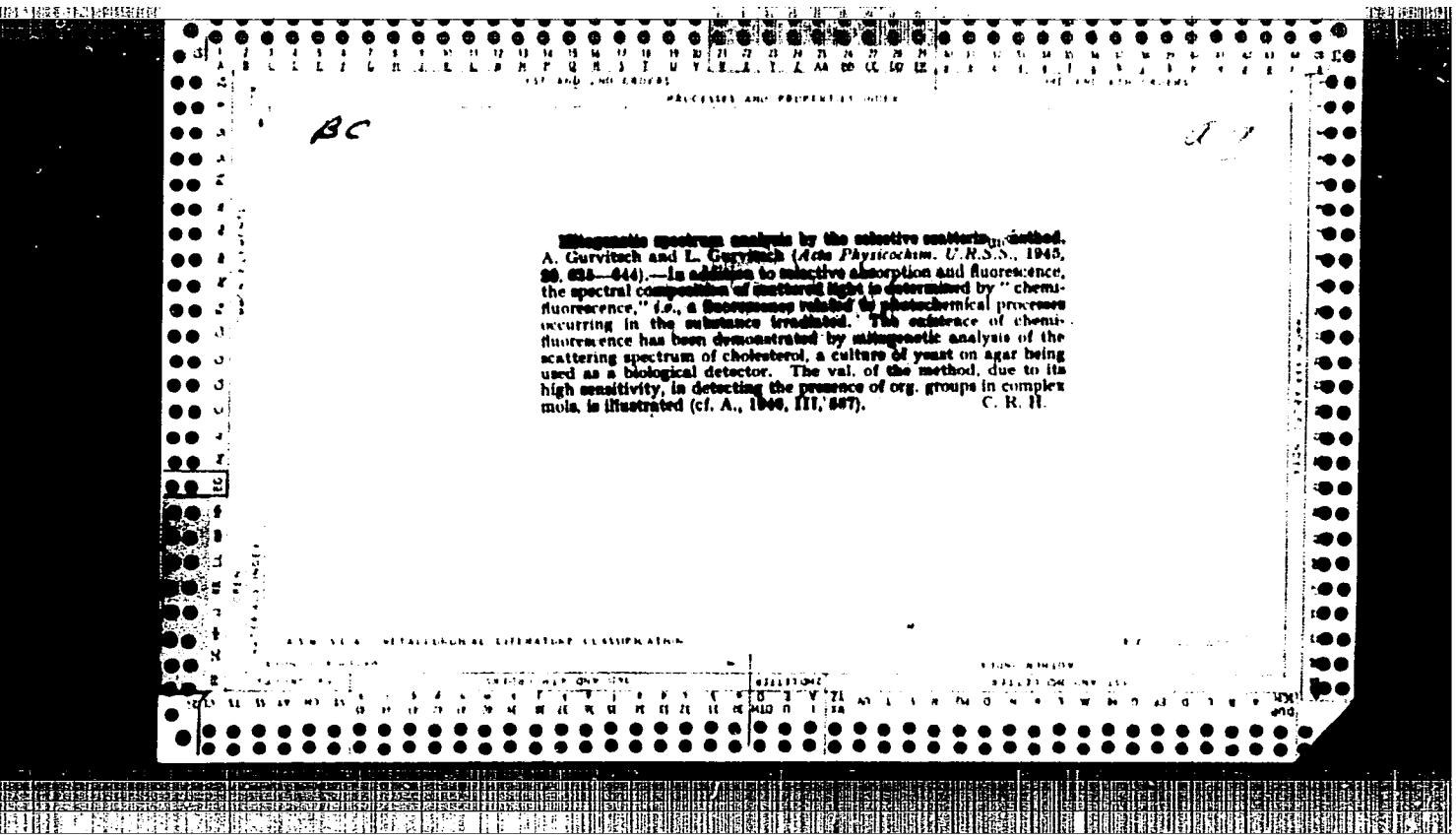
A-1

Polymerisation processes induced by mitogenetic radiation. II. Influence on amino-acids and production of a "de-aminase" by irradiation. A. Gurvitsch and L. Gurvitsch (*Acta Physicochim. U.R.S.S.*, [illegible]; cf. A., [illegible]).—The term "deaminase" is used to indicate the mode of action rather than the chemical nature of a substance (I) of high mol. wt. that is formed during the irradiation of aq. glycine. The probable sequence of reactions leading to the formation of (I) is discussed. This formation follows, but is not dependent on, the primary dissociation of the glycine mol., which is confined to the fission of OH. The presence of O_2, though essential to the production of NH_3 by the action of (I) on glycine, is not needed for the formation of (I). The energy of polymerisation of the active monomerides that constitute the units of (I) amounts to 71—76 kg.-cal., and may be available for the activation of the deamination process. F. L. U.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Quenching and inhibition of mitogenetic radiation. A. Gurvitsch and L. Gurvitsch (*Acta Physicochim. U.R.S.S.*, 1940, **13**, 683—689).—All sol. substances which absorb in the ultra-violet can act as quenchers of every kind of mitogenetic radiation. They include not only As, I, quinine, etc., but also substances of undetermined nature that are produced by the external radiation; these latter are responsible for the rapid "fatigue" exhibited by yeast cultures, as shown by the fact that a fresh yeast culture to which a small proportion of a "fatigued" culture has been added is thereby rendered useless. Inhibitors differ from quenchers in affecting only the radiation induced by exothermic chemical reactions, including decomp. by enzymes. They are used up in the process of inhibition, and in no way disturb the course of the accompanying fermentative change. The no. of mols. of inhibitor taking an active part in inhibition is very small compared with that of the enzyme or substrate mols. taking part in the enzyme reaction. F. L. U.



Mitogenetic spectrum analysis by the selective scattering method. A. Gurvitsch and L. Gurvitsch (*Acta Physicochim. U.R.S.S.*, 1945, **20**, 635—644).—In addition to selective absorption and fluorescence, the spectral composition of scattered light is determined by "chemi-fluorescence," *i.e.*, a fluorescence related to photochemical processes occurring in the substance irradiated. The existence of chemi-fluorescence has been demonstrated by mitogenetic analysis of the scattering spectrum of cholesterol, a culture of yeast on agar being used as a biological detector. The val. of the method, due to its high sensitivity, in detecting the presence of org. groups in complex mols. is illustrated (cf. A., 1940, III, 887). C. R. H.

CA

2

Kinetics of hydrocarbon conversions at a broad range of space velocities. A. P. Ballod, L. V. Gurvich, V. V. Korolev, and A. V. Frost (Moscow State Univ.). *Vestnik Mosk. Univ. 6, No. 2, Ser. Fiz.-Mat. i Estestven. Nauk* No. 1, 57-66(1951). The applicability of the (integrated) kinetic equation $v_0 \ln[1/(1-y)] = \beta v_0 y + \alpha$, characteristic of reactions inhibited by their products, was tested in a broad range of space velocities v_0 (l./l. catalyst/hr.) varied by variation of the length of the catalyst column; y is the degree of conversion, and α and β are consts. The test is linearity of the plot of $v_0 \ln[1/(1-y)]$ as a function of $v_0 y$. Cracking of decahydronaphthalene (I) on activated Askan clay (30 min. runs) was found to obey this rate equation at 300° (v_0 = 0.31-0.91, y = 0.51-0.20), 400° (0.40-2.60, 0.51-0.18), and 500° (0.305-2.08, 0.76-0.24), with α = 0.088, 0.120, and 0.20, resp., and β = 0.85, const. at all 3 temps. The apparent activation energy is 5.0 kcal./mole. On an aluminosilicate cracking catalyst (SiO_2 78.18, Al_2O_3 10.75, CaO 0.47, MgO 1.80%), at 400°, the equation holds between v_0 = 0.6 and 1.0, with α = 0.5, β = 0.07. However, it fails at v_0 = 1, the plot of $v_0 \ln[1/(1-y)]$ as a function of $v_0 y$ changes from an upward sloping straight line into a descending vertical line parallel to the axis of ordinates, and the plot of y as a function of $1/v_0$ becomes a straight line passing through the origin. In that range of high v_0, the reaction evidently becomes zero-order and is described by $v_0 y$ = 0.16. The suspicion that this change of kinetics might be due to a change of the Reynolds no. (which, in the cracking of I at 400°, varied from 2.8 to 26.0) was tested by the reaction of redistribution of H in an unsatd. cracking-gasoline fraction b. 100-150° in soln. in Et_2O:Me_2CO = 1:1, followed by the decrease of the iodine no., at 400° on the aluminosilicate catalyst in the form of 4 × 4-mm. granules in a reactor of 15-mm. diam. at a const. Re = 17. Despite this constancy, the reaction still becomes zero-order at high v_0, above v_0 = 2.0-2.6 (y = 0.67-0.80), and then follows the equation $v_0 y$ = 1.81. An increase of Re from 13 to 70 at const. v_0 had no effect on y. Consequently, the cause of the changeover to zero order must be chem. A clue was provided by the observation that, with I, the compn. of the products underwent a change at high v_0; the low-b. fractions disappeared, and the catalyzate began to boil at 150-60°. On the basis of information in the literature, it is assumed that the first reaction of I consists in an isomerization to products contg. cyclopentane rings, and that the subsequent cracking bears on such isomerization products; this, among others, is borne out by the predominance, in the gaseous cracking products, of isobutane over

over

Gurvich, L. V.

62

"Electronic investigation of molecular structure." I. A. V. Frost, P. A. Akishin, L. V. Gurvich, G. A. Kurkchi, and A. A. Konstantinov (Univ. Moscow). *Vestnik Moskov. Univ.* 8, No. 12; *Ser. Fiz.-Mat. i Estestven. Nauk* No. 8, 85-95(1953).—An electron-diffraction instrument for the study of any vaporizable substance is described in which a beam of electrons of 1 mm. diam., projected from an electron gun with water-cooled anode, is focused by an electromagnetic lens and diffracted by a stream of vapor of the given substance (I) onto a photographic film. The film chamber is water-cooled for high-temp. work. The vapor stream issues from a jet assembly made of Mo glass for low temps. or metal for high temps., which consists of a nozzle connected through a tube jacketed to prevent condensation to an ampul contg. the I. The position of the nozzle is adjusted with a microscope; a well is provided for the latter. A 2nd well opposite the nozzle contains liquid N and acts as a trap for the I vapor. A sliding holder contg. a standard cryst. substance can be placed in the electron beam for calibration. This electronograph was used to det. the mol. structure of CCl_4 (II) and $CdBr_2$ (III) at temps. of 15 and 600°, resp. The intensities and radii of max. and min. in the diffraction patterns are tabulated and graphed. Av. values for the C—Cl and Cl—Cl distances in II are 1.756 ± 0.010 and 2.868 ± 0.015 A., resp.; for the Cd—Br and Br—Br distances in III they are 2.55 ± 0.03 and 4.70 ± 0.03 A., resp. The values for II and III agree within exptl. error with those of Allen and Sutton (*C.A.* 44, 4746c) and Lister and S. (*C.A.* 36, 511), resp. J. W. L., Jr.

(4)

AKISHIN,P.A.; GURVICH,L.V.

Radial distribution methods in electronography and tagle of values for $\sin \frac{\pi}{10} rm$. Uch.zap.Mosk.un. no.164:153-200 '53. (MIRA 8:7)

(Electronography)

VEYTS, I.V.; GURVICH, L.V.; KOROBOV, V.V.

Determination of the dissociation energy of metal oxides (SrO, CaO and MgO) by measuring the intensity of resonance lines of the metal atoms in flame spectra. Izv. AN SSSR. Ser. fiz. 19 no.1:21-22 Ja-F '55. (MLRA 8:9)

1. Institut goryuchikh iskopayemykh Akademii nauk SSSR
(Spectrum analysis) (Spectrometer)

GURVICH, L. V.

USSR/Atomic and Molecular Physics - Physics of the Molecule, D-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34313

Author: Veyts, I. V., Gurvich, L. V.

Institution: None

Title: Dissociation Energies of Oxides of Magnesium, Calcium, Strontium, and Barium

Original Periodical: Optika i spektroskopiya, 1956, 1, No 1, 22-33

Abstract: Based on a study of the intensities of resonant lines of metal atoms in a flame, a determination was made of the constant of equilibrium of dissociation of oxides of alkali-earth metals in flames of C_2H_2 + air, C_2H_2 + O_2, H_2 + air, and H_2 + O_2. With the aid of the so obtained values of the equilibrium constant, the energies of the dissociation of the oxides were obtained.

1 of 1

GURVICH, L.V.; KOROBOV, V.V.

Calculation of the thermodynamic functions of diatomic gases taking into account the excitation of molecular electronic states. Zhur. fiz. khim. 30 no.12:2794-2800 D'56. (MLRA 10:4)

1. Institut goryuchikh iskopayemykh, Moskva.
(Thermodynamics)

Gurvich, L.V.

USSR/ Physical Chemistry - Molecule. Chemical Bond B-4

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7166

Author : Veyts, I.V. and Gurvich, L.V.
Inst : Academy of Sciences USSR
Title : Dissociation Energy of AlO

Orig Pub : Dolk. AN SSSR, 1956, Vol 108, No 4, 659-661

Abstract : The energy of dissociation of AlO was calculated from the equilibrium constant for the dissociation of AlO in an oxyacetelene flame by a previously described method (RZhKhim, 1956, 74133). The partial pressure of atomic Al was calculated from the intensity of the Al(I) line at 3961.5A. A value of 133.5 ± 3 kcal/mole (5.8ev) was found for D(Al) [sic].

Card 1/1

GURVICH, L. V.

PRIKHOT'KO, A. F

24(7) P 3 PHASE I BOOK EXPLOITATION SOV/1365

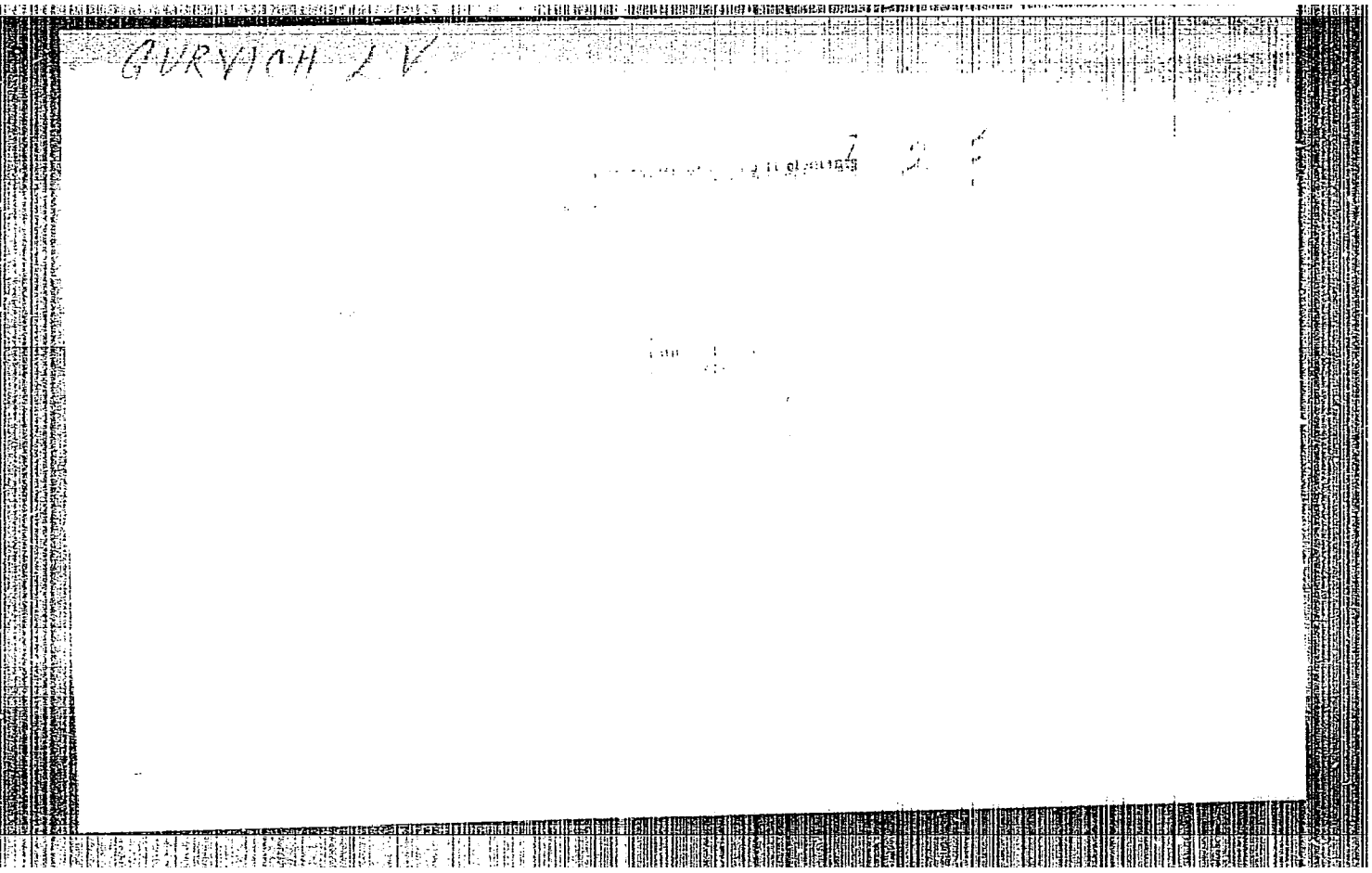
L'vov. Universytet

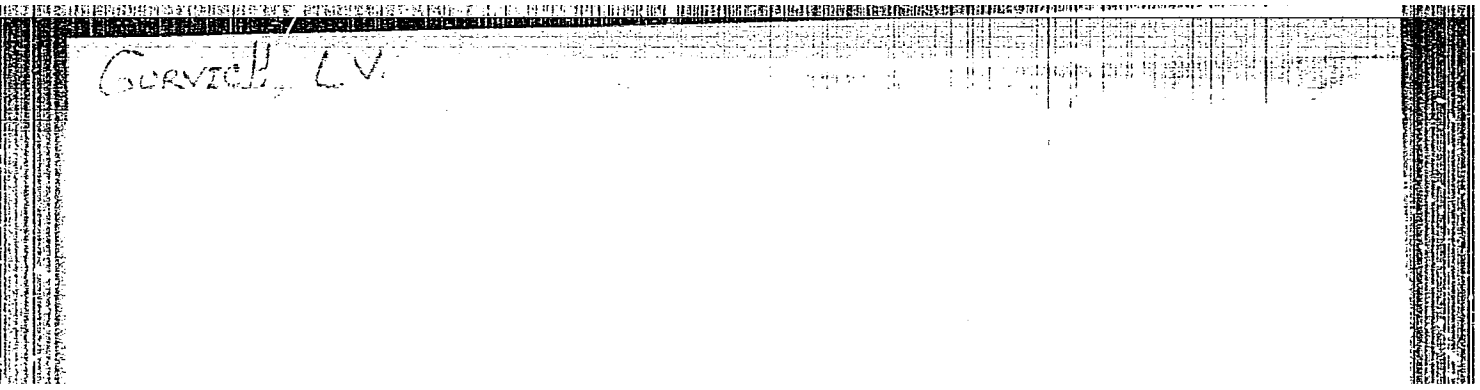
Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

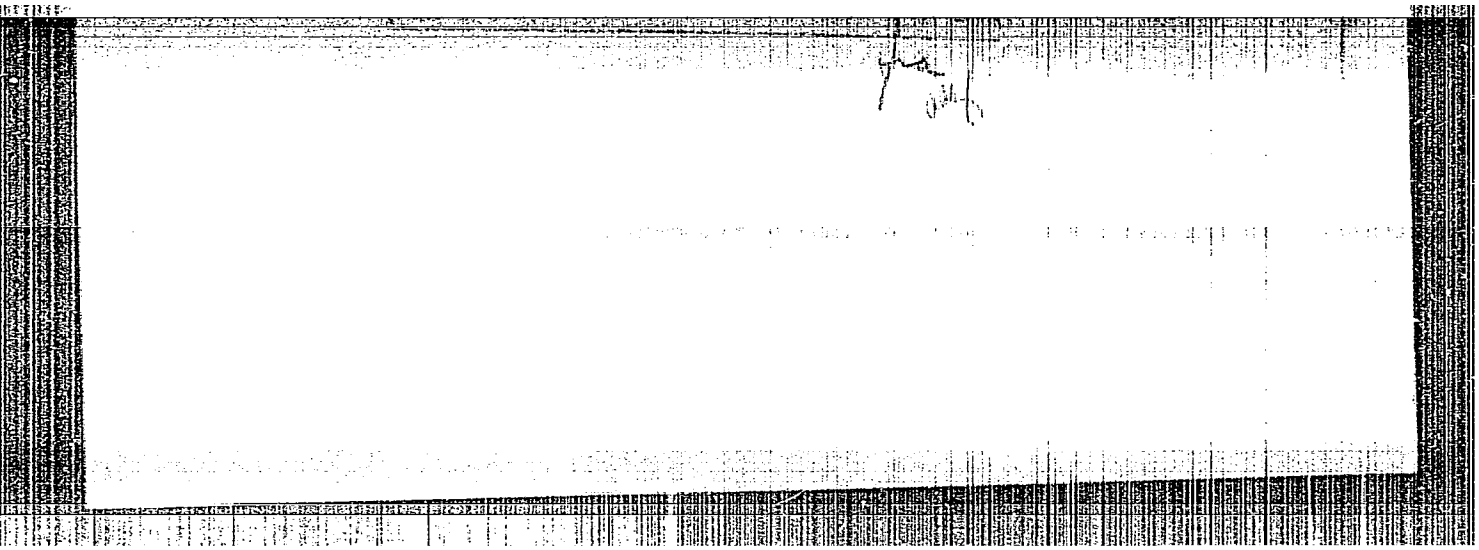
Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Lazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Lavisberg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Card 2/30







APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000617420006-5"

SOV/137-58-8-16357

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 17 (USSR)

AUTHORS: Veyts, I.V., Gurvich, L.V.

TITLE: On the Problem of the Energy of Dissociation of the Basic Electronic States of the Oxides of Alkaline-earth Metals (K voprosu ob energii dissotsiatsii i osnovnykh elektronnykh sostoyaniyakh okislov shchelochnozemel'nykh metallov)

PERIODICAL: Fiz. sb. L'vovsk. un-t, 1957, Nr 3 (8), pp 305-308

ABSTRACT: The energy of dissociation of the molecules of MgO, CaO, SrO, and BaO was determined by the measurement of the constants of the equilibrium of the dissociation reactions of these oxides in the flame of H_2 with O_2 and air, as well as of acetylene with O_2 and with air. The relationships of log K_p to $1/T$ for the reaction of dissociation of oxides were plotted. The values for the energy of dissociation, established through the log K_p-$1/T$ relationship in a broad temperature range, have no relation to the basic state of the oxides of the metals examined. 1. Alkaline earth metal oxides--Ionization 2. Alkaline earth metal oxides--Energy 3. Flames--Ionzing effects

Yu.L.

Card 1/1

Gurvich, L. V.

76-10-20/34

AUTHORS: Veyts, I. V., Gurvich, L. V.

TITLE: On the Dissociation Energies of Oxide Molecules of the Alkaline Earth Elements (K voprosu ob energiyakh dissotsiatsii molekul okislov shchelochno-zemel'nykh elementov).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2306-2311 (USSR)

ABSTRACT: The dissociation energies of CaO and SrO were investigated here on the basis of measurements of the equilibrium constants of their dissociation in a $CO+O_2$-flame in which the partial pressure of the hydroxyl is considerably lower than in other flames with a temperature of ~ 3000°K. The values $D_o(CaO)$ and $D_o(SrO)$ obtained by the investigations in flames with a different hydroxyl content are compared. It is shown that the presence of the CaOH- and SrOH-molecules does not influence the dissociation energy values to be determined of the calcium- and strontium oxides. Furthermore it is shown that the gas temperature in the exterior flame cone of $CO+O_2$ which was measured according to the Ornstein

CARD 1/2

On the Dissociation Energies of Oxide Molecules of the Alkaline Earth Elements 76-10-20/34

method agrees well with the theoretically computed equilibrium temperature. On the strength of an analysis of the data concerning the dissociation energies of molecules of the oxides of the alkaline earth elements which were obtained according to different methods it is shown that the most precise values were obtained on the strength of the investigation of the dissociation equilibrium of the corresponding oxides in the flames. There are 4 tables and 3 Slavic references.

ASSOCIATION: Institute for Mineral Fuels Moscow (Institut goryuchikh iskopayemykh, Moskva).

SUBMITTED: July 27, 1956

AVAILABLE: Library of Congress

CARD 2/2

GURVICH, L.V.

AUTHORS: Gurvich, L. V., Veyts, I. V. 20-5-25/48

TITLE: Spectroscopic Investigation of the NaCl $\rightleftarrows$ Na + Cl Reaction Equilibrium in the H_2 + Cl_2 Flame and the Dissotiation Energy of NaCl (Spektroskopicheskoye issledovaniye ravnovesiya reaktsii NaCl $\rightleftarrows$ Na + Cl v plameni H_2 + Cl_2 i energiya dissotsiatsii NaCl).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 5, pp. 811-812 (USSR)

ABSTRACT: First the results of several respective works are referred to. The investigation was carried out in a flame fed with the fuel compound 1,00 H_2 + 0,80 Cl_2 + 0,016 H_2O (liquid). The temperature of this flame was 2450° K. The partial pressure of atomic chlorine was $3{,}37 \cdot 10^{-2}$ atm. The determination of the flame temperature from the reaction of the D-bands of Na at a distance of from 3-6 mm above the reaction zone supplied the values 2350 - 2550° K. For the investigation of the reaction equilibrium NaCl $\rightleftarrows$ Na + Cl diluted solutions of two sodium salts ($1{,}02 \cdot 10^{-3}$ N-

Card 1/4

Spectroscopic Investigation of the $NaCl \rightleftharpoons Na + Cl$ 20-5-25/48

Reaction Equilibrium in the $H_2 + Cl_2$ Flame and the Dissotiation Energy of NaCl.

solution of NaCl and $1,19.10^{-3}$ N-solution of Na_2CO_3) were introduced to the flame. The partial pressure of Na in the flame was determined from the absolute intensity of the resonance bands 5890 and 5896 Å in the flame spectrum some mm above the reaction zone. The methods used for measurements and the treating of experimental data was already discussed in a preliminary work (reference 1). The values P_{Na} of the partial pressure found this way are listed in a table. The same table contains the values of $P_{\Sigma Na}$ = the sum of the partial pressures of Na and its compounds in the flames of the gases. The values of $P_{\Sigma Na}$ are calculated from the data of the sodium salt introduced to the flame, from the composition of the compound feeding the flame and from the composition of the flame gases. Using the values of P_{Na} and the partial pressures of the gaseous components of the combustion products of the hydrochloric acid flame one can

Card 2/4

Spectroscopic Investigation of $NaCl \rightleftharpoons Na + Cl$ 20-5-25/48
Reaction Equilibrium in the $H_2 + Cl_2$ Flame and the Dissotation Energy of NaCl.

show that Na in the case of equilibrium in the flame is present only in form of NaCl, Na^+ and Na and that the partial pressures of NaH, NaOH and Na_2Cl_2 are so small that they can be neglected. A further table contains the values of P_{Na^+}, $P_{NaCl} = P_{\Sigma Na} - P_{Na^+} - P_{Na}$, the constant of the equilibrium of reaction $NaCl \rightleftharpoons Na + Cl$ with the flame temperature as well as of $D_o(NaCl) = T(\Phi^*_{Na} + \Phi^*_{Cl} - \Phi^*_{NaCl} - R\ln K_p)$. The comparison of the results found in this work with one another as well as with the results obtained by means of other methods speaks in favor of the following: In the outer core of the flame conditions must be reached which are close to equilibrium, and the dissotation energies of the metal chlorides can be investigated in a hydrochloric acid flame. There are 1

Card 3/4

Spectroscopic Investigation of $NaCl \rightleftharpoons Na + Cl$ 20-5-25-48
Reaction Equilibrium in the $H_2 + Cl_2$ Flame and the Dissotation
Energy of NaCl.

table, and 7 references, 6 of which are Slavic.

PRESENTED: May 4, 1957, by V. N. Kondrat'yev, Academician

SUBMITTED: April 25, 1957.

AVAILABLE: Library of Congress

Card 4/4

GURVICH, L.V.

AUTHORS: Matveyev, M.A., Rabukhin, A.I., Gurvich, L.V. 72-2-5/20

TITLE: Ceramic Lining of Vibration Mills (Keramicheskaya futerovka vibromel'nits).

PERIODICAL: Steklo i Keramika, 1958. Nr 2, pp. 10-13 (USSR)

ABSTRACT: In order to produce a vibration mill that is proof against wear, and also in order to avoid the metal- or rubber lining in vibration mills such as are in use now, a method of fastening a ceramic lining had to be found. For test purposes the vibration mill M - 200 - 1.5 with a separate vibrator was developed by SKB VNIITISM for lining with plates made of various materials (see total view fig. 1). The lining plates are shown in form of drawings in figs. 2, 3, 4 and 5. For the fastening of these plates various kinds of adhesives were tested, and it was found that an adhesive based upon resin ED - 6 gave the best results. The production of this adhesive is then described in detail, as also, in fig. 6, the manner of fastening the ceramic plates. Tests were then carried out with lining plates of different origins. Fig. 7 shows holders with glued-on uralite plates. Figs. 8, 9 and 10 show linings of uralite, porcelain, and earthenware after having been in operation

Card 1/2

for test purposes, without interruption, for 110 hours, without any damage having been found. There are 10 figures and 1 Slavic reference.

ASSOCIATION: VNIITISM

AVAILABLE: Library of Congress

Card 2/2

SOV/51-5-2-18/26

AUTHOR: Gurvich, L.V.

TITLE: The Absolute Probabilities of Transitions in an Atom of Tl (Ob absolyutnykh veroyatnostyakh perekhodov atoma Tl)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 2, pp 205-207 (USSR)

ABSTRACT: The absolute values of the oscillator strengths of the 3776 and 5350 Å lines of Tl had been earlier determined experimentally (Refs 1-5) and by calculation (Refs 4, 6). Table 1 gives the values obtained by the authors of Refs 1-6. The most reliable set of experimental results is that of Kvater (Ref 3) obtained by the method of "hooks". Comparison of Kvater's f values with those calculated theoretically, as well as with those found experimentally for Ga and In (Ref 7), shows them to be too small. Kvater himself pointed out the inexactness of determination of the absolute f values because of lack of reliable data on the saturated vapour pressure of Tl. The author shows that, employing simple thermodynamical relationships, it is possible to determine the absolute values of f by the method of "hooks" without using any data on the vapour pressures of metals. It is sufficient to

Card 1/3

measure the values of Nf in a wide range of temperatures and to know the thermodynamical properties of the metal in solid and liquid states. The author describes this thermodynamic method of treatment of experimental data and applies it to find the absolute values of f for Tl using Kvater's experimental results (Ref 3). Table 2 lists the values of the absolute oscillator strengths for the 3776 and 5350 lines of Tl at temperatures of 885-1338°K (columns 4 and 6 of Table 2) obtained in this way. The mean value of f for the 3776 line was 0.125 and for the 5350 line it was 0.135. The latter value agrees well with the results of theoretical calculations as well as with the value found by Stephenson (Ref 4). The values of the oscillator strengths for the 3776 and 5350 Å lines of Tl make it possible to correct the absolute values of the oscillator strengths for other Tl lines. The described thermodynamical method for calculation of f was applied to the experimental results of Ostrovskiy and Penkin (Ref 7) for In. The values thus obtained differ by only 10% from those

The Absolute Probabilities of Transitions in an Atom of Tl

given by the latter authors in Ref 7, which confirms that in the case of In reliable values of the saturated vapour pressure were available. There are 2 tables and 11 references, 7 of which are Soviet, 1 Danish, 1 English, 1 American and 1 Swiss.

ASSOCIATION: Institut goryuchikh iskopayemykh, AN SSSR (Institute of Fuel Minerals, Academy of Sciences of the U.S.S.R.)

SUBMITTED: February 6, 1958

Card 3/3 1. Atoms--Properties 2. Thallium--Properties 3. Perturbation theory --Mathematical analysis

AUTHORS: Gurvich, L. V., Veyts, I. V. SOV/48-22-6-9/28

TITLE: The Determination of the Dissociation Energies of Molecules by the Investigation of the Equilibrium of Their Dissociation in Flames (Opredeleniye energiy dissotsiatsii molekul na osnovanii izucheniya ravnovesiya ikh dissotsiatsii v plamenakh)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 673-676 (USSR)

ABSTRACT: When studying earlier papers (Refs 1-6) we find that one of the best methods of determining dissociation energies is based upon determination of the partial pressure P_M of the metal according to the intensity of its lines in the flame spectrum. Basing on the assumption that in flames metal can only exist in form of the atoms M and the molecules MX, partial pressure P_{MX} of the compound under investigation is determined according to the following formula: $P_{MX} = P_{\sum M} - P_M$, where $P_{\sum M}$ denotes the general pressure of the metal compounds in the flames. It is pointed out (Refs 5-7) that partial pressure can be determined according to the known equilibrium constant of the dissociation reactions of the compounds.

Card 1/3

On the basis of the examples of calculation given it is found that the dissociation energy MX can be determined by the method mentioned only if $D_0(MX) \geq T(\Delta\Phi_T + 1{,}38 - R \ln PX)$. The presence of other metal compounds impairs the accuracy of this method (Ref 8). The method was employed for the investigation of dissociation energies of the diatomic oxides of the elements of group 3 (BO, AlO, GaO, InO, TlO) in the case of flame compositions of $C_2H_2+O_2$, H_2+O_2, $CO+O_2$. Measurements were carried out as described (Refs 5,6). The metals were introduced into the flames as solutions of their sulfuric acid- or chromium salts and boron in form of $Na_2B_4O_7$. The partial pressure of metals in flames was determined on the basis of measurements carried out of the intensity of resonance lines with the transitions $^2S_{1/2} \rightarrow$ $\rightarrow {}^2P_{1/2,\ 3/2}$. Results are shown by tables. In conclusion it is pointed out that this paper confirms the possibility of accurately determining dissociation energies of molecules in flames.

The Determination of the Dissociation Energies of Molecules by the Investigation of the Equilibrium of Their Dissociation in Flames

SOV/48-22-6-9/28

At the same time it is mentioned that by comparing stable molecules BO, AlO, GaO and InO it can be proved that the theory developed by H. G. Howell (Ref 20) concerning the low dissociation energy of InO is wrong. There are 24 references, 9 of which are Soviet.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Mineral Fuels, AS USSR)

1. Metals--Ionization 2. Energy--Measurement 3. Metals--Spectra
4. Flames--Spectra 5. Mathematics

Card 3/3

SOV/76-32-11-11/32

5(4)

AUTHORS: Veyts, I. V., Gurvich, L. V., Rtishcheva, N. P.

TITLE: Thermodynamic Properties of Magnesium, Calcium, Strontium, Barium and of Their Oxides and Monohydrides in Gaseous State (Termodinamicheskiye svoystva magniya, kal'tsiya, strontsiya, bariya, ikh okislov i monogidridov v gazoobraznom sostoyanii)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2532-2542 (USSR)

ABSTRACT: The thermodynamic properties of the substances mentioned in the title were determined according to the methods of static thermodynamics at 293.16; 298.16; 400 (100) and 3500°K. From the data obtained the equilibrium constants of the dissociation of the corresponding diatomic gases in the investigated temperature range were calculated. The values for the thermodynamic potential $\Phi^*_T = -\frac{Z^\circ_T - H^\circ_o}{T}$, the entropy S°_T and the change of the enthalpy $H^\circ_T - H^\circ_o$ were determined as well. The determination of the thermodynamic functions of the diatomic gases was carried out according to the table method by

Card 1/2

Thermodynamic Properties of Magnesium, Calcium, Strontium, Barium and of Their Oxides and Monohydrides in Gaseous State

Gordon and Barnes (Ref 25). In the calculations the values of the ϕ^* potentials for atomic oxygen and hydrogen recommended by the Byuro standartov SShA (Bureau of Standards USA) were used.
The authors thank I. G. Baybuz and V. S. Shmeleva.
There are 11 tables and 29 references, 5 of which are Soviet.

ASSOCIATION: Institut goryuchikh iskopayemykh, Moskva (Institute of Mineral Fuel, Moscow)

SUBMITTED: May 4, 1957

BROUNSHTEYN, B.I.; GURVICH, L.V.; YUNGMAN, V.S.; YURKOV, G.N.

Statistical methods of computing the thermodynamic functions of ideal gases. Report No. 1: General relationships of statistical thermodynamics for ideal gas. Trudy GIPKH no.42:3-10 '59. (MIRA 13:10)
(Thermodynamics) (Gases)

BROUNSHTEYN, B.I.; GURVICH, L.V.; YUNGMAN, V.S.; YURKOV, G.N.

Statistical methods of computing the thermodynamic functions of ideal gases. Report No. 2: Expression for the statistical sum based on the states of diatomic molecules. Method of direct summation based on the levels of diatomic molecules. Trudy GIPKH no.42:11-20 '59.
(MIRA 13:10)

(Gases) (Thermodynamics)

BROUNSHTEYN, B.I.; GURVICH, L.V.; YUNGMAN, V.S.; YURKOV, G.N.

Statistical methods of computing the thermodynamic functions of ideal gases. Report 3: Approximate methods of calculating the statistical sum from the rotational states of diatomic molecules. Trudy GIPKH no.42:21-50 '59. (MIRA 13:10)
(Thermodynamics) (Gases)

24(7), 5(2) SOV/51-1-18/27

AUTHORS: Gurvich, L.V. and Novikov, M.M.

TITLE: On the Valence Angle of Oxygen in the HOCl Molecule (O valentnom ugle kisloroda v molekule HOCl)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 1, pp 116-117 (USSR)

ABSTRACT: Hedberg and Badger (Ref 1) used the infrared spectrum of gaseous HOCl to deduce that the oxygen valence angle ∠HOCl is equal to 113°. The present authors are of the opinion that this angle should not be greater than 110° and they repeat Hedberg and Badger's calculations showing that best agreement with the empirical data is obtained with ∠HOCl = 104 ± 3°. There is 1 English reference.

SUBMITTED: November 5, 1958

Card 1/1

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S/081/61/000/011/005/040
B105/B203

24 5300

AUTHORS: Yungman, V. S., Gurvich, L. V., Kvlividze, V. A., Rtishcheva, N. P.

TITLE: Thermodynamic functions of monoatomic and diatomic gases in a wide temperature range. IV. N^+, N_2^+, and NO^+ in ideal state up to 20,000° K

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 11, 1961, 40, abstract 11Б 292 (Sb. tr. Gos. in-ta prikl. khimii, 1960, vyp. 46, 15 - 28)

TEXT: The thermodynamic functions (Φ_T^*, S_T^o, and $H_T^o - H_o^o$) of N^+, N_2^+ and NO^+ in ideal state up to 20,000° K at a pressure of 1 atm were calculated on an electronic computer. In the values Φ_T^* and S_T^o at $T \leq 10,000^o$ K, the error does not exceed 0.01 cal/mole/deg, and at $T = 20,000^o$ K it does not exceed 0.2 cal/mole/deg. The values of the logarithms of the equilibrium constants for the ionization of N, N_2, NO and the dissociation of N_2^+ and NO^+ are given. [Abstracter's note:
Card 1/1

83691

S/076/60/034/008/003/014
B015/B054

5.4700 (1273)

AUTHOR: Gurvich, L. V. (Moscow)

TITLE: Determination of the Sublimation Heats of Metals on the Basis of Measurements of Anomalous Dispersion by the Method of Rozhdestvenskiy. Thermodynamic Properties and Sublimation Heats of Gallium, Indium, and Thallium

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1691-1698

TEXT: It is shown that the method developed by D. S. Rozhdestvenskiy (Ref. 3) can be used to determine the sublimation heats of Ga, In, and Tl. The method is based on the determination of the product N·f (N = number of atoms of the metal vapor in 1 cm^3, f = absolute value of the forces of the oscillator for the spectral line of the atom in which the interference peaks are measured) from the measured values of the distance between the interference peaks. The probability of optical transitions of atoms and the forces of oscillators are constant for any

Card 1/3

Determination of the Sublimation Heats of Metals on the Basis of Measurements of Anomalous Dispersion by the Method of Rozhdestvenskiy. Thermodynamic Properties and Sublimation Heats of Gallium, Indium, and Thallium

S/076/60/034/008/003/014
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spectral line, and it is possible to write down $R \ln NfT = A - \frac{B}{T}$ (1) (R = gas constant, A and B = coefficients, T = temperature), where B = heat of vaporization of the metal. Thus, the sublimation heat of the metal for 0°K can be determined with high accuracy if the thermodynamic properties of the metal for the solid and gaseous state are known. The data of the oscillator forces of the Ga, In, and Tl atoms were taken from publications, and the thermodynamic properties in the gaseous state were calculated statistically (Table 1, data calculated for 293.15°, 298.16°, 400° to 3500°K), as well as for the condensed state (Table 2, values for 298.16° to 1500°K). The values for N·f of the resonance lines of Ga, In, and Tl were investigated by Yu. I. Ostrovskiy and N. P. Penkin, as well as G. S. Kvater, at the Leningradskiy universitet (Leningrad University). With the aid of these data, the following values were calculated:

83691

Determination of the Sublimation Heats of Metals on the Basis of Measurements of Anomalous Dispersion by the Method of Rozhdestvenskiy. Thermodynamic Properties and Sublimation Heats of Gallium, Indium, and Thallium

S/076/60/034/008/003/014
B015/B054

ΔH_o^o (Ga, gas) = 59000 ± 1000 cal/gram atom; ΔH_o^o (In, gas) = 57700 ± 600 cal/gram atom; ΔH_o^o (Tl, gas) = 43150 ± 250 cal/gram atom. The author mentions a paper by L. P. Lyubimov and Yu. N. Lyubitov (Ref. 25) which was published after the present paper had been printed. There are 2 tables and 27 references: 6 Soviet, 10 US, 1 British, 8 German, and 1 Belgian.

ASSOCIATION: Akademiya nauk SSSR, Institut goryuchikh iskopayemykh (Academy of Sciences of the USSR, Institute of Mineral Fuels)

SUBMITTED: September 12, 1958

Card 3/3

GURVICH, L. V.

report to be submitted for the IUPAC 21st Conference and 18th Intl. Congress of Pure and Applied Chemistry, Montreal, Canada, 2-12 August 1961

GORODISKIY, A. V., Academy of Sciences UkSSR, Kiev - "The oscillographic investigation of the electrochemical kinetics in fused salts" (Section A.3,e.2 - Session I, 11 Aug 61, afternoon)

GURVICH, L. V., Academy of Sciences USSR, Moscow - "The calculation of thermodynamic functions of gases in a wide temperature range" (Section A.3,c,(1), Session II - 8 Aug 61, afternoon)

KARGIN, V. A., Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "Vitrification phenomena in crystallin polymers" (Section 3.4 - 7 Aug 61, afternoon)

KISELEV, A. V., Moscow State University imeni M. V. Lomonosov - "The influence of surface heterogeneity and adsorbate-adsorbate interaction on the adsorption properties of solid surfaces" (Joint Session, Sections A.2 and B.1 - 8 Aug 61, morning)

KONDRAT'YEV, V. N., Institute of Chemical Physics, Academy of Sciences USSR, Moscow - "The HO_2 radical" (Section A.1, Session I - 11 Aug 61, morning) (Also, Section A.1, Chairman, Session I - 8 Aug 61, morning)

KUZNETSOV, V. I., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "A novelty in the use of organic co-precipitants for concentration of small amounts of the elements" (To be presented in Russian) (Section C.2 - 11 Aug 61, morning)

LAVRUKHINA, A. K., BARCVSKIY, Z. Z., and ISUPALEVA, L. P., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "New data on radiochemical investigations of the processes of fission and fragmentation induced by high energy protons" (Section A.4 - 8 Aug 61, afternoon)

LOVACHEV, L. A., Academy of Sciences USSR, Moscow - "Determination of rate constants of elementary processes from flame velocities as a function of temperature, pressure, and molecular transfer coefficients" (Section A.3,b,(2) - 7 Aug 61, afternoon)

MENDIATH, S. (Probably MENDYATE, S.) and GERASIMOV, Y. I., Moscow State University imeni M. V. Lomonosov - "Study of the thermodynamic properties of the system iron-latinum" (Section A.3,c,(3), Session II(A) - 11 Aug 61, morning)

PANCHENKOV, G. M., KOLCHIN, A. M., NAIANOV, V. F., and SHESHI, Ya., Moscow State University imeni M. V. Lomonosov - "Emission of complex ions in solid-phase reactions" (Joint Session, Sections A.2 and B.1, 8 Aug 61, morning)

SEMENOV, N. N., Institute of Chemical Physics, Academy of Sciences USSR, Moscow - "Certain chemical reactions at reduced temperatures and related problems of energy transfer" (To be presented in Russian) (Plenary lecture - Saturday, 12 Aug 61)

SHILOV, Ye. A., Academy of Sciences UkSSR, Kiev - "The active agents and the intermediary complexes in the heterolytic reactions of halogenation of the organic compounds" (Section A.1, Session II - 11 Aug 61, morning)

SMIRNOV, M. V., Electrochemistry Institute, Sverdlovsk - "The equilibrium between the titanium subgroup metals and the salt melts" (Section B.3 - 7 Aug 61, afternoon)

TAL'ROZE, V. L., Institute of Chemical Physics, Academy of Sciences USSR - "Reactions of ions and molecules in the gas phase" (Section A.1, Session I - 9 Aug 61, afternoon)

TERENIN, Aleksandr N., Leningrad State University imeni A. A. Zhdanov - (Section A.1, Chairman, Session I - 8 Aug 61, afternoon Session) (Also on program for Section A.1, Session I - 9 Aug 61, afternoon)

TERENIN, Aleksandr N., VILESOV, F. I., KURBATOV, B. L., and DODONOVA, N. Ya., Leningrad State University imeni A. A. Zhdanov - "Mass-spectrometry and luminescence of radicals in the photodissociation and photoionization of molecules by vacuum ultra-violet radiation" (Section A.1, Session I - 9 Aug 61 - afternoon)

TUNITSKIY, N. N., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov - "On the dissociation of molecules on electron impact and the early states of radiation-chemical processes" (Section A.1, Session I - 8 Aug 61, afternoon)

YAICHENKIN, Emmanuil Ye., and KORCLEV, V. V., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Moscow - "The plasma generator and its use for spectral analysis of alloys and rocks" (Section C.1 - 8 Aug 61, morning)

VINOGRADOV, A. P., LAVRUKHINA, A. K., and REVINA, L. D., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "The study of nuclear reactions in iron meteorites under the action of high energy protons" (Section A.4 - 8 Aug 61, afternoon)

YAKOVLEV, Yu. V., and ALIMARIN, I. P., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "The determination of trace impurities in some materials for semiconductor techniques by radio-activation analysis" (To be presented in Russian) (Section C.1 - 8 Aug 61, afternoon)

YEROFEYEV, Boris V., Institute of Physical-Organic Chemistry, Minsk - "The effect of donor and acceptor admixtures on the decomposition rate of solids" (Section A.2 - 8 Aug 61, afternoon)

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AUTHORS: ~~Gurvich, L. V.~~, Yungman, V. S., Prozorovskiy, Ye. A., Vorob'yev, B. A.

TITLE: Calculation of the thermodynamic functions of diatomic gases at elevated temperatures by direct summation on an electronic machine

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1961, 62, abstract 24B422 (Tr. In-ta goryuchikh iskopayemykh AN SSSR, v. 12, 1961, 196 - 205)

TEXT: A very rapid and precise method is proposed for the calculation of the thermodynamic function tables of diatomic perfect gases at temperatures of up to 20,000 to 25,000°K. The statistical sums are calculated, for the rotational vibrational and electron states of the molecule in question, by direct summation through the really existant energy levels, using a high-speed electronic computer. For this kind of calculation the molecular constant which most precisely describes all the energy levels of

Card 1/3

Calculation of the thermodynamic ...

the molecule must be known, as also the highest values of the quantum numbers up to which summation is to be made. A method is described for calculating vibrational constants and maximum vibrational quantum numbers v(max) using the conditions for the convergence of the vibrational levels toward the dissociation limit. A method has been developed for calculating values of rotational quantum numbers J(max) for each vibrational state, using the properties of the effective potential curves of the rotating molecule. As an example some results are given of the calculation of the main state $x^3\Sigma_g^-$ of an O_2 molecule. In particular, to describe the energy of vibrational levels (in cm^{-1}) the equation $G_o(v) = 1568.077\ v - 11.706\ v^2 - 0.00255\ v^3 + 0.00224\ v^4 - 0.0000821\ v^5$ is derived, which converges towards the 41261 cm^{-1} limit at v(max) = 42 (experimental values of dissociation energy of O_2 are 41260 ± 15 cm^{-1}). J(max) values are found for all v. The thermodynamic functions of molecular oxygen are given for the following temperatures: 5000°K (63.395 and 73.038), 10000°K (70.457 and 79.942),

Card 2/3

32326

Calculation of the thermodynamic ...

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15000°K (74.229 and 83.255) and 20000°K (76.746 and 83.203) (values in brackets are for the isobaric-isothermal potential Φ_T^* and entropy S_T^o respectively, in cal/mol. degree. [Abstracter's note: Complete translation.]

Card 3/3

GURVICH, L.V. (Moskva); KVLIVIDZE, V.A. (Moskva)

Thermodynamic functions of mono- and diatomic gases over a wide temperature range. Part 1: Method of calculating the thermodynamic functions of monoatomic gases in the ideal state. Zhur.fiz.khim. 35 no.8:1672-1680 Ag '61. (MIRA 14:8)

(Gas dynamics)

GURVICH, L.V.; YUNGMAN, V.S. (Moskva)

Thermodynamic functions of mono- and diatomic gases in a wide range of temperatures. Part 2: Method for computing the thermodynamic functions of diatomic gases in the ideal state. Zhur.fiz.khim. 35 no.9:1927-1934 '61. (MIRA 14:10)

1. Institut goryuchikh iskopayemykh.
(Gas dynamics)

YUNGMAN, V.S.; GURVICH, L.V.; KVLIVIDZE, V.A.; PROZOROVSKIY, Ye.A.; RTISHCHEVA, N.P. (Moscow)

Thermodynamic functions of mono- and diatomic gases in a wide temperature range. Part 3: N, N_2 and NO in the ideal state up to 20000 K. Zhur.fiz.khim. 35 no.10:2182-2189 O '61. (MIRA 14:11)

1. Akademiya nauk SSSR, Institut goryuchikh iskopayemykh. (Nitrogen) (Nitrogen oxide) (Gas dynamics)

VEDENEYEV, Vladimir Ivanovich; GURVICH, Lev Veniaminovich; KONDRAT'YEV, Viktor Nikolayevich, akademik; MEDVEDEV, Vadim Andreyevich; FRANKEVICH, Yevgeniy Leonidovich; DRAGUNOV, E.S., red.; RYLINA, Yu.V., tekhn. red.

[Energies of chemical bond breaking. Ionization potentials and electron affinity]Energii razryva khimicheskikh sviazei. Potentsialy ionizatsii i sredstvo k elektronu; spravochnik. [By]V.I. Vedeneyev i dr. Moskva, Izd-vo Akad. nauk SSSR, 1962. 215 p. (MIRA 16:2)

(Chemical bonds) (Ionization) (Chemical affinity)

PHASE I BOOK EXPLOITATION SOV/6260

Gurvich, Lev Veniaminovich, Georgiy Akopovich Khachkuruzov, Vadim Andreyevich Medvedev, Inessa Veniaminovna Veyts, Georgiy Andreyevich Bergman, Vladimir Stepanovich Yungman, Nina Petrovna Rtishcheva, Lidiya Fedorovna Kuratova, Georgiy Nikolayevich Yurkov, Amaliya Abramovna Kane, Boris Fedorovich Yudin, Boris Isidorovich Brounshteyn, Viktor Feodoseyevich Baybuz, Valeriy Aleksandrovich Kvlividze, Yevgeniy Aleksandrovich Prozorovskiy, and Boris Aleksandrovich Vorob'yev.

Termodinamicheskiye svoystva individual'nykh veshchestv; spravochnik v dvukh tomakh. tom 1: Vychisleniye termodinamicheskikh svoystv; tom 2: Tablitsy termodinamicheskikh svoystv (Thermodynamic Properties of Individual Substances; Reference Book in Two Volumes. v. 1: Calculation of Thermodynamic Properties; v. 2: Tables of Thermodynamic Properties). 2d ed., rev. and enl. Moscow, Izd-vo AN SSSR, 1962. 1161 and 916 p. 4000 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Institut goryuchikh iskopayemykh; and Gosudarstvennyy komitet Soveta Ministrov SSSR

Card 1/9/3

Thermodynamic Properties (Cont.) SOV/6260

po khimii. Institut prikladnoy khimii.

Resp. Ed.: V. P. Glushko, Academician, L. V. Gurvich, G. A. Khachkuruzov, I. V. Veyts, and V. A. Medvedev; Ed. of Publishing House: K. P. Gurov; Tech. Ed.: V. G. Laut.

PURPOSE: This reference book may be used in scientific-research and experimental-design work in institutes, design offices, and schools of higher education, as well as for training specialists in chemical thermodynamics and thermal physics.

COVERAGE: Volume 1 of this work deals with methods for calculating thermodynamic properties and with the selection of constants required for the calculations. Volume 2 contains tables of thermodynamic properties (reduced thermodynamic potential, entropy, enthalpy, and the logarithm of the dissociation or ionization constants of equilibrium) compiled, where data were lacking, on the basis of published and unpublished material from a number of Soviet research institutes. Thermodynamic properties for the ideal gas

Card 2/9 3

state are presented in table form for 335 gases, 44 liquids, and 45 solids compounded from 33 chemical elements and their isotopes, viz.: H, D, T, He, Li, Be, B, C, N, O, F, Ne, Na, Mg, Al, Si, P, S, Cl, Ar, K, Ca, Br, Kr, Re, Sr, Zr, I, Xe, Cs, Ba, Hg, and Pb. Thermodynamic properties are given for the following 22 gases in the range from room temperature to 20,000°K: H, H^+, H^-, O, O^+, H_2, O_2^+, O_2, OH, OH^+, H_2O, N, N^+, N_2, N_2^+, NO, NO^+, C, C^+, CO, CO^+, and e^-; for the 14 least stable gases up to 4000°K; and for the remaining 299 gases up to 6000°K. Virial coefficients for 34 gases are also given up to 6000°K.

TABLE OF CONTENTS (Volume 1) [Abridged]:

YUNGMAN, V.S.; GURVICH, L.V.; [illegible]

Thermodynamic properties of gaseous compounds of nitrogen with hydrogen (NH, NH_2, and N_2H_4). Trudy GIPKH no.49:20-37 '62.
(MIRA 17:11)

GURVICH, L.V.; [illegible], V.A.; [illegible], V.I.; [illegible], Yu.A.; [illegible], P.F.; [illegible], V.S.

Thermodynamic functions of mono- and diatomic gases within a wide range of temperatures. Part 6: O, O^+, O_2, and O_2^+ in the ideal state up to 20 000° K. Trudy GIPKH no.49:38-60 '62.

(MIRA 17:11)

[redacted], L.V.; [redacted], L.A.; [redacted], Ye.A.; [redacted], L.F.

Thermodynamic functions of mono- and diatomic gases within a wide range of temperatures. Part 7: C, C$^+$, CO, CO$^+$ in the ideal state up to 20 000° K. Trudy GIPKH no.49:61-83 '62. (MIRA 17:11)

32643
S/076/62/036/001/015/017
B119/B101

11.4100

AUTHORS: Gurvich, L. V., Kvlividze, V. A., and Rtishcheva, N. P.

TITLE: Thermodynamic functions of monatomic and diatomic gases within a wide temperature interval. V. Alkali metals in the state of an ideal gas up to 10,000°K

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 1, 1962, 219 - 222

TEXT: The thermodynamic functions of gaseous Li, Na, K, Rb, and Cs (Φ_T^*, S_T^o, $H_T^o - H_O^o$) were calculated for temperatures of up to 10,000°K by the method of L. V. Gurvich and V. A. Kvlividze (Zh. fiz. khimii, 35, 1672, 1961). When calculating the statistical sums and the figures derived from them, allowance was made for all the electron states of the individual gases, which are related to the transition of the valence electron into a state with the principal quantum number $n \leq n_{max}$. $n_{max} = 2.461 \cdot T^{1/6}$. $\log K_p$ was calculated from $\log K_p = 0.21854\left[\Phi_T^*(M^+) + \Phi_T^*(\bar{e}) - \Phi_T^*(M) - \frac{I}{T}\right]$, where $\Phi_T^*(M)$, $\Phi_T^*(M^+)$, and $\Phi_T^*(\bar{e})$ are the values of Φ_T^* of the gaseous alkali metal,

Card 1/2

SUBMITTED: April 19, 1961

Card 2/2

L 8550-65 EWT(l)/EWT(m) ASD(a)-5/AFTC(b)/AFWL/AFMD(p)/AFETR/ASD/EBD(dp)/
ESD(t)/RAEM(t) JD/JW
ACCESSION NR: AR4044045 S/0058/63/000/011/E002/E002

B

SOURCE: Ref. zh. Fizika, Abs. 11E6

AUTHOR: Gurvich, L. V.; Vorob'yev, B. A.; Kvlividze, V. A.; Prozorovskiy, Yu. A.; Rtishcheva, N. P.; Tungman, V. S.

TITLE: Thermodynamic functions of monatomic and diatomic gases in a broad temperature range. VI. O, O+, and O_2 in the ideal state to 20,000°K

CITED SOURCE: (Sb. tr.) Gos. in-ta prikl. khimii, v. 49, 1962, 38-60

TOPIC TAGS: thermodynamic function, monatomic gas, diatomic gas, high speed computer, computer

TRANSLATION: Gives the results of calculations of thermodynamic functions (Φ_T, S_T^0 and $H_T^0 - H_0^0$) O, O+, O_2, and O_2+, made, in accordance with previously-described methods (Journal of Abstracts, Physics, 1D4; 2D10), on a high-speed computer. Bibliography: 67 references.

SUB CODE: GC, TD ENCL: 00

Card 1/1

L 8551-65 EWT(l)/EWT(m) SSD/AFMD(p) AFWL/AFETR/ASD(a)-5/AFTC(b)/ESD(dp)/ESD(t)/RAEM(t) JD/JW

ACCESSION NR: AR4044046 S/0058/63/000/011/E002/E002

SOURCE: Ref. zh. Fizika, Abs. 11E7

AUTHOR: Gurvich, L. V.; Kvlividze, V. A.; Prozorovskiy, Ye. A.; Rtishcheva, N. P.

TITLE: Thermodynamic functions of monatomic and diatomic gases in a broad range of temperatures. VII. C, C+, CO, CO+ in the ideal state to 20,000° K

CITED SOURCE: (Sb. tr.) Gos. in-ta prikl. khimii, vy*p. 49, 1962, 61-83

TOPIC TAGS: thermodynamic function, monatomic gas, diatomic gas, computer

TRANSLATION: Gives the results of calculations of the thermodynamic functions (Φ_T^0, S_T^0 and $H_T^0 - H_0^0$) C, C+, CO and CO+, made on an electronic computer in accordance with previously described methods (Journal of Abstracts, Physics, 1962, 1D4; 2D10). Bibliography: 73 references. Part VI: see abstract 11E6.

SUB CODE: GC, TD ENCL: 00

Card 1/1

S/051/63/014/002/023/026
E039/E120

AUTHORS: Gurvich, L.V., and Shenyavskaya, Ye.A.

TITLE: The electron spectrum of scandium monofluoride

PERIODICAL: Optika i spektroskopiya, v.14, no.2, 1963, 307-308

TEXT: This investigation was carried out in order to provide information on the spectra of diatomic compounds of elements of subgroup IIIb with halogens. A discharge tube containing ScF_3 and metallic Sc, with He and A as a discharge carrier, was used as a light source. Spectra were obtained using an ИСП-28 (ISP-28) spectrograph and the optimum conditions were: cathode (Armco iron) 6 mm diameter, 30 mm long, 410 V, 350 mA, He at a pressure of 6 mm Hg. In the region of 2850 Å a group of bands was obtained which had not previously been observed. Their intensity was too low for analysis and they were overlapped by iron lines. More satisfactory results were obtained using a quartz tube with a 10 mm diameter capillary 150 mm long and heated externally by a nichrome helix. The tube contained a mixture of Sc and ScF_3 and was sleeved with platinum in order to prevent the fluoride reacting with the quartz. Optimum conditions were: He and A at 2 mm

The electron spectrum of scandium...

pressure; 1.2 - 1.3 amp at 2.4 - 3 kV. The ScF spectrum in the range 2550-3000 Å was observed in the second order using a ДФС-8 (DFS-8). Four groups of bands were observed in the violet and one band system in the red. Greatest intensity was at about 2880 Å. An analysis of the vibrational structure of the spectra was carried out. Calculated values of the molecular constants for ScF are: $\omega_e'' = 734.3$; $\omega_e'' x_e'' = 3.5$; $_e = 35013.4$; $\omega_e' = 582.6$; $\omega_e' x_e' = 6.1$ cm^{-1}. It is shown that the energy of dissociation of ScF is ~4.5 to 6 eV.
There is 1 table.

SUBMITTED: July 30, 1962

Card 2/2

GURVICH, L.V.; YUNGMAN, V.S.

Temperature dependence of the thermodynamic functions of an ideal gas. Teplofiz. vys. temp. 2 no.1:118-119 Ja-F '64. (MIRA 17:3)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur.

GURICH, L.V.; RYABOVA, V.G.

Dissociation energy of the BaCl molecule. Teplofiz. vyss. temp. 2 no.2:215-218 Mr-Ap '64. (MIRA 17:6)

ACCESSION NR: AP4042467 S/0294/64/002/003/0401/0405

AUTHORS: Gurvich, L. V.; Ryabova, V. G.

TITLE: The determination of metal halide dissociation energies on the basis of equilibrium reaction studies in flames. 1. Dissociation energy of BaF

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 3, 1964, 401-405

TOPIC TAGS: equilibrium reaction, hydrogen air flame, barium, partial pressure, fluorine, dissociation rate, atomic line intensity

ABSTRACT: The equilibrium reaction rate of Ba in a hydrogen-air flame, $aH_2+bO_2+cN_2+dH_2O$, with the addition of $(C_2F_5)_3N$ vapor, was investigated experimentally. Barium was added to the flame in the form of 0.02 M $BaCl_2$ solution. The absolute value of Ba partial pressures in eight different flames, at 20-mm height, was determined by the absolute line intensity λ = 5535 A with the additions of several fluorine rates (5.5, 15.8, 35, and 50 mg/min of $(C_2F_5)_3N$) and also in the absence of fluorine. From this the dissociation energy $D_0(BaF)$ of barium fluoride was determined, using

Card 1/2

ACCESSION NR: AP4042467

the expression

$$D_0(BaF) = T[\Delta\Phi_T^* - R \ln K_p(BaF)],$$

which gave a value of 147.6±1.7 kcal/mol. The dissociation energy was also determined from the ratio I_{Ba}/I'_{Ba} (relative atomic line intensity) as a function of the partial pressure $P_{\Sigma F}$ which in turn gave a value of 147.6±2.2, in excellent agreement with the first method. Orig. art. has: 5 formulas, 2 tables, and 1 figure.

ASSOCIATION: Nauchno-issledovatel'skiy institut vy*sokikh temperatur (Scientific Research Institute of High Temperatures)

SUBMITTED: 06Apr64 ENCL: 00

SUB CODE: FP NO REF SOV: 006 OTHER: 008

Card 2/2

L 40786-65 EWG(j)/EWT(m)/EPF(c)/EWG(m)/EPR/T/EWP(t)/EWP(b) Pr-4/Pg-4
IJP(c)/RPL JD/JW/JG/RM
ACCESSION NR: AP4044520 S/0294/64/002/004/0540/0548

AUTHORS: Gurvich, L. V.; Ryabova, V. G.

TITLE: Investigation of dissociation energies of gallium and indium oxygen compounds in flames during equilibrium reaction I. Experimental method and investigation of $aH_2 + bO_2 + cN_2 + dH_2O$ flames

SOURCE: Teplofizika vysokikh temperatur, v. 2, no. 4, 1964, 540-548

TOPIC TAGS: combustion, flame, gallium oxide, indium oxide, dissociation, metallized flame, reaction rate constant, line spectrum, partial pressure, UM 2 monochromator, M 106/1 millivoltmeter, Orekh power source, LT 3 lamp, SI 16 lamp

ABSTRACT: The relative and absolute spectral line intensities of metal atoms in flames were studied in order to determine the dissociation energy of metallic compounds in the combustion products of the flames. It is shown that if the metal Me forms a compound MeX with a radical in the flame (O, OH, or H) one can calculate the reaction rate constant K_p in $MeX \rightleftarrows Me + X$ by determining the partial pressure of the metal. This in turn can be accomplished from the absolute spectral line intensities of the metal atoms in the flame obtained by comparing relative intensities with standard calibrated sources of continuous spectra. Thus

Card 1/3

$$p_{ke} = \frac{k\lambda}{hcg_m A_{mn}} \tau \frac{T}{l} Q(T) e^{-E_m/T} B I_{\lambda\,lamp}^{abs}$$

and

$$I_{\lambda\,lamp}^{abs} = \varepsilon_\lambda(T) \lambda^{-5} c_1 e^{-c_2/T} n_e$$

To measure these absolute and relative resonance lines, type $aH_2 + bO_2 + cN_2 + dH_2O$ flames were used and the metal was introduced in the flames as salts. The flame temperatures were measured by the spectral line-reversal technique and ranged between 1765C and 2159C. These results were checked by measuring D-line intensity of Na after introducing 5×10^{-3} M solution of NaCl in the flame. In order to determine radical concentrations in the flames, the equilibrium reaction of lithium with the combustion products was investigated. At 1600-2000C temperatures lithium exists as Li atoms and LiOH compounds with a known reaction constant. This in turn allows one to determine p_H and subsequently p_{OH} and p_O. The results of the measurement on the equilibrium reaction of Ga and In with combustion products will be given in a further study. Orig. art. has: 11 formulas, 3 tables, and 1 figure.

ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatur (Scientific Research Institute of High Temperatures)

Card 2/3

L 40786-65
ACCESSION NR: AP4044520

SUBMITTED: 28Apr64 ENCL: 00 SUB CODE: FP, GC

NO REF SOV: 006 OTHER: 009

Card 3/3

L 24480-65 EWT(m)/EPF(c)/EPR/EWP(j)/EWP(b) Pc-4/Pr-4/Ps-4 BPL JD/
WW/JW/RH

ACCESSION NR: AP4047388 S/0294/64/002/005/0834/0835

AUTHORS: Ryabova, V. G.; Gurvich, L. V. B

TITLE: Determining dissociation energies of metal halides on the basis on investigating the equilibrium of reactions in flames. 2. Dissociation energies of CaF, CaF_2, SrF and SrF_2

SOURCE: Teplofizika vysokikh temperatur, v. 2, no. 5, 1964, 834-835

TOPIC TAGS: chromatographic analysis, dissociation energy, fluorine compound, halide

ABSTRACT: The authors present a continuation of research results in investigating dissociation energies of metal halides based upon studies of the equilibrium of reactions in flames (L. V. Gurvich and V. G. Ryabova, Teplofizika vysokikh temperatur, 2, No. 2, 215, 1964; and 2, No. 3, 401, 1964). Spectroscopic determination of equilibrium constants for the reactions forming CaF and SrF molecules was carried out by introducing strontium and calcium into hydrogen-air flames containing a small percentage of fluorine (about 0.4% of the flame gases). The flame composition was varied according to the formula $[a\,H_2 + b\,O_2 + c\,N_2 + d\,H_2O]$, where a,b,c, and d are varied to produce 8 different flame types. The authors described the experimental setup and combustion products in an earlier work

Card 1/2

L 24480-65

ACCESSION NR: AP4047388

(Teplofizika vy*sokikh temperatur 2, No. 4, 1964). In the reaction of the type Me + HF $\rightleftarrows$ MeF + H, the equilibrium constants were determined by spectroscopic measurement of partial pressures and by the variation of the relative intensity of the metal line in the flame spectra with and without fluorine addition for varying quantities of fluorine. Reaction equilibrium constants showed close agreement for all tests. The corresponding dissociation energies were found to be 135 $\pm$ 7 and 132 $\pm$ 7 kcal/mole for CaF and SrF respectively. CaF_2 and SrF_2 molecules were formed by the reaction type MeF + HF $\rightleftarrows$ MeF_2 + H in an excess of fluorine. Consideration of partial pressures led to association energies of $\approx$ 136 kcal/mole for (CaF -F) and $\approx$ 140 kcal/mole for (SrF - F). Summing the dissociation and association energies yielded close agreement with earlier work performed in a different manner. Orig. art. has: 4 equations.

ASSOCIATION: Nauchno-issledovatel'skiy institut vy*sokikh temperatur (Scientific Research Institute of High Temperatures)

SUBMITTED: 31Aug64 ENCL: 00

SUB CODE: GC NO REF SOV: 004 OTHER: 001

Card 2/2

MEDVEDEV, V.A.; YUNGMAN, V.S.; VOROB'YEV, A.F.; GURVICH, L.V.; BERGMAN, G.A.; REZNITSKIY, L.A.; KOLESOV, V.P.; GAL'CHENKO, G.L.; KHODEYEV, Yu.S.; KHACHKURUZOV, G.A.; SOKOLOV, V.B.; GOROKHOV, L.N.; MONAYENKOVA, A.S.; KOMAROVA, A.F.; VEYTS, I.V.; YURKOV, G.N.; MALENKOV, G.G.; SMIRNOVA, N.L.; GLUSHKO, V.P., akademik, otv. red.; MIKHAYLOV, V.V., red.; KARAPET'YANTS, M.Kh., red.

[Thermal constants of substances; reference book in ten numbers] Termicheskie konstanty veshchestva; spravochnik v desiati vypuskakh. Moskva, No.1. 1965. 144 p. (MIRA 18:7)

1. Moscow. Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii.

L 44637-65 EPF(c)/EPR/EWP(j)/EWT(l)/EWT(m)/EWG(m) Pc-4/Pr-4/Pa-4/Pi-4 EPL

ACCESSION NR: AP5006464 S/0294/65/003/001/0033/0046

AUTHOR: Gurvich, L. V.; Ktishcheva, N. P.

TITLE: Analytic representation of tabulated values of thermodynamic properties of gases

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 1, 1965, 33-46

TOPIC TAGS: thermodynamic property, ideal gas, entropy, enthalpy, specific heat, thermodynamic potential, analytic approximation

ABSTRACT: In view of certain difficulties involved in the use of tabulated thermodynamic characteristics of various substances, especially when it comes to interpolation, the authors consider the possibility of representing thermodynamic properties of substances in an ideal-gas state by equations of the type $A \ln T + \sum_{n=0} A_n T^n$ which would be convenient for use in electronic computers with limited memory capacity. It is shown that for most gases satisfactory accuracy can be obtained in the temperature ranges 293 - 6000K and 1000 - 20000K using $-2 \leq n \leq +3$. The coefficients of the corresponding equations are calculated for the 375 gases listed in

Card 1/2

L 45637-65

ACCESSION NR: AP5006467 5

a book by one of the authors (Gurvich et al, Termodinamicheskiye svoistva individual'nykh veshchestv [Thermodynamic Properties of Individual Substances], Izd-vo AN SSSR, 1962). The results are listed in tables. "In conclusion the authors thank B. A. Vorb'yev and V. S. Yungman for valuable discussion of the questions considered in this paper, and also I. G. Baybuz and V. S. Shmelova for help with the computer calculations." Orig. art. has: 15 formulas, 2 tables, and 1 figure.

ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatur (Scientific Research Institute of High Temperatures)

SUBMITTED: 30May64 ENCL: 00 SUB CODE: TD, ME

NR REF SOV: 002 OTHER: 007

Card 2/2 mb

RYABOVA, V.G.; GURVICH, L.V.

Metal - hydroxyl bonding energy in CaOH, SrOH, and BaOH molecules. Teplofiz. vys. temp. 3 no.2:318-321 Mr-Ap '65. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur, Moskva.

L 21171-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JW

ACCESSION NR: AP5003033 S/0051/65/018/001/0132/0134

AUTHOR: Gurvich, L. V.; Novikov, M. M.; Ryabova, V. G.

TITLE: Investigation of spectra and determination of dissociation energies of oxygen compounds of gallium and indium

SOURCE: Optika i spektroskopiya, vo. 18, no. 1, 1965, 132-134

TOPIC TAGS: arc spectrum, dissociation energy, gallium compound, indium compound, oxide, hydroxide

ABSTRACT: In view of the contradictory published data concerning the dissociation energy of the GaO and InO molecules, and also concerning the oxygen compounds produced by gallium and indium in flames, the authors have undertaken new investigations of the electronic spectrum of GaO and the equilibrium reaction of Ga and In with the combustion products of flames of the type $aH_2 + bO_2 + cN_2 + dH_2O$ and $aCO + bO_2 + dH_2O$. The known system of bands of GaO was investigated in the 3350--4150 Å band with a grating spectrograph, and the constants of the molecule $Ga^{69}O$ were determined. An attempt to obtain the absorption spectrum of GaO in the range 3600--7000 Å with the arc and gas discharge exposed to a strong pulsed

Card 1/2

L 21171-65
ACCESSION NR: AP5003033

source has shown absorption due to GaO only in the 4000 Å region. Although there is no final proof that the lower state of the investigated system is the ground state of GaO, this assumption is quite likely. The equilibrium of the reactions of Ga and In with the flame combustion products was investigated by determining the partial pressures of the metals from the relative intensity of the atomic lines in the flame spectra. The corresponding equilibrium constants were calculated from the measured partial pressures and from those calculated theoretically for equilibrium conditions. It was impossible to determine the dissociation energies of GaOH and InOH in the flames of carbon monoxide, because of the high temperature and the low concentration of the hydroxyl. In hydrogen and oxygen flames, the dissociation energies of GaOH and InOH were 101 ± 5 and 90 ± 5 kcal/mole, respectively. It is concluded that the main compounds of Ga and In in the 12 types of flames employed are the hydroxides, produced in the reaction $Me + H_2O = MeOH + H$ (Me = Ga or In). Other effects observed in the flames are briefly discussed.

ASSOCIATION: None

SUBMITTED: 04Nov63 ENCL: 00 SUB CODE: OP, GC

NR REF SOV: 003 OTHER: 004

Card 2/2

L 22894-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5003037 S/0051/65/018/001/0143/0145

AUTHOR: Gurvich, L. V.; Ryabova, V. G.

TITLE: Investigation of the dissociation energy of BaO and BaOH

B

SOURCE: Optika i spektroskopiya, v. 18, no. 1, 1965, 143-145

TOPIC TAGS: barium compound, dissociation energy, binding energy, flame spectroscopy

ABSTRACT: In a book by one of the authors (with G. A. Khachkuruzov, V. A. Medvedev, and I. V. Veyts "Termodinamicheskiye svoystva individual'nykh veshchestv" [Thermodynamic Properties of Individual Substances], AN SSSR, M., 1962) it is stated that the value of the dissociation energy D_0 obtained as a result of the investigation of equilibrium reactions of Ba in flames and by determining the heat of sublimation of BaO by various methods are in agreement, and yield a value 137 ± 2 kcal/mole. However, since these two methods of measurement can result in a considerable dispersion of the results, the authors have redetermined the dissociation energy by measuring the partial pressure of atomic barium in a flame of carbon monoxide with oxygen, in which no BaOH molecules are formed to distort

Card 1/2

L 22894-65

ACCESSION NR: AP5003037

the results. The measurements were made in the flame with composition 2CO + O_2 + + 0.03% H_2O (T = 2,965K). The partial pressure was determined from the absolute intensity of the λ = 5535 Å line. At the same time, the partial pressure of the Ba^+ ions was determined from the absolute intensities of the 4,554 and 4,934 Å lines. Check measurements were also made in three hydrogen-air flames with different compositions, and the results were much higher dissociation values, the difference being due to the fact that the flame contained appreciable amounts of BaOH. The effect of the presence of BaOH on other measurements is discussed briefly, and the values of 134 ± 8 and 114 ± 5 kcal/mole respectively are recommended for the dissociation energies of the molecules BaO and for the binding energy of BaOH, respectively. Orig. art. has: 2 formulas and 1 table.

ASSOCIATION: None

SUBMITTED: 03Feb64 ENCL: 00 SUB CODE: OP

NR REF SOV: 010 OTHER: 002

Card 2/2

L 4386-66 EWT(1)/T LIP(c)

ACC NR: AP5017909 UR/0051/65/019/001/0143/0145
535.33

AUTHOR: Novikov, M. M.; Gurvich, L. V. 44,55 44,55 44,55

TITLE: A new study of the emission spectrum of the SrCl molecule

SOURCE: Optika i spektroskopiya, v. 19, no. 1, 1965, 143-145

TOPIC TAGS: strontium compound, chloride, emission spectrum, band spectrum, optic transition, dissociation constant

ABSTRACT: One of the aims of the study was to obtain in emission the same systems of bands that were previously observed in absorption only, and thereby determine more accurately the constants of the molecule under investigation. The radiation source was an uncondensed discharge in a tube (H. Schuller, Spectrochim. Acta v. 4, 85, 1950), with an electrically heated capillary (140 mm long and 5 mm in diameter). The discharge voltage and current were 3--4 kv and 1.5 - 2 a. The spectra were photographed with a high-transmission spectrograph with STE-1 diffraction grating. The emission spectrum was found to contain all six previously known band systems, as well as additional bands, including some with vibrational quantum numbers larger than those reported earlier. The dissociation energies, frequencies, and vibrational constants of the transitions are calculated. Orig. art. has: 5 formulas and 1 table.

ASSOCIATION: None

Card 1/2